UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/630,315	07/31/2000	Naoto Kinjo	058744	5533

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EXAMINER
DASTOURI, MEHRDAD

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 10/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-26* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-26* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *31 July 2000* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All b) ☐ Some * c) ☐ None of:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____ .

DETAILED ACTION

Specification

1.   The abstract of the disclosure is objected to because the abstract should be in

narrative form and generally limited to a single paragraph on a separate sheet within the

range of 50 to 150 words. It is important that the abstract not exceed 150 words in

length since the space provided for the abstract on the computer tape used by the

printer is limited. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 1, 8 and 15-26 are rejected under 35 U.S.C. 102(b) as being anticipated

by Saber et al (Face Detection and Facial Feature Extraction Using Color, Shape and

Symmetry-based Cost Functions; IEEE Proceedings on Pattern Recognition, ISBN:

1015-4651).

Regarding Claim 1, Saber et al disclose a method of extracting a specified image

subject which successively implements a plurality of specified image subject extracting

algorithms, comprising the steps of:

implementing an extracting algorithm of a precedent stage under a

predetermined extracting condition to obtain an extraction result (Figure 1; Page 655,

Section 2, Sub-sections 2.1, 2.2 and 2.3, skin/non-skin classification using the

chrominance channels of the YES color space);

changing an extracting condition of a subsequent stage so as to be adapted to

the thus obtained extraction result (Figures 1 and 2, Page 656, Sub-section 2.4. The

subsequent extracting algorithm is shape classification which has been adapted to the

obtained results of the precedent skin/non-skin extraction algorithm.); and

implementing an extracting algorithm of said subsequent stage under the thus

changed extracting condition (Figure 1, Pages 656-657, Sub-sections 2.4 and 2.5).

With regards to Claim 8, arguments analogous to those presented for Claim 1

are applicable to Claim 8.

Regarding Claim 15, Saber et al disclose a method of extracting a specified image

subject, comprising the steps of:

performing image subject extraction processing by a specified image subject

extracting algorithm or algorithms for each extraction area (Figures 1-3; Pages 656-657,

Section 2, Sub-sections 2.1-2.4, skin/non-skin classification and shape classification

algorithms);

performing a vote in an N-dimensional space of an image characteristic quantity

for each extraction area extracted by said specified image subject extracting algorithm

or algorithms (Figures 1-3; Pages 656-657, Section 2, Sub-section 2.5, cost function

(5)); and

performing weighting of degree of certainty as a specified image subject based

on an aggregation value of the vote within a section area for aggregation in said N-

dimensional space (Figures 1-3; Pages 656-657, Section 2, Sub-section 2.5, cost function Formula (5), weighted combination of the cost function) Formula (10)).

Regarding Claim 16, Saber et al further disclose the method of extracting the specified image subject according to claim 15, wherein said image subject extraction processing by said specified image subject extracting algorithm or algorithms is performed through dividing it into a plurality of stages (Figures 1-3; Pages 656-657, Section 2, Sub-section 2.5, plurality of stages for eye, nose and mouth localization, and further plurality of stages based on cost functions C_n^1, C_n^2, C_n^3 for eye detection); and

said image subject extraction processing in a subsequent stage is preferentially applied to an extraction area in which said aggregation value in the voting space of said image characteristic quantity exceeds a predetermined value (Figures 1-5; Pages 656-658, Section 2, Sub-section 2.5, Thresholds t_1 and t_2).

Regarding Claim 17, Saber et al further disclose the method of extracting the specified image subject according to Claim 15, wherein said specified image subject extraction processing by said specified image subject extracting algorithm or algorithms is performed through dividing it into a plurality of stages (Figures 1-3; Pages 656-657, Section 2, Sub-section 2.5, plurality of stages for eye, nose and mouth localization); and said image subject extraction processing in a subsequent stage is preferentially applied to an extraction area corresponding to said section area for aggregation within a preferential frame in the voting space of said image characteristic quantity (Figures 1-5; Pages 656-657, Section 2, Sub-section 2.5).

Regarding Claim 18, Saber et al further disclose the method of extracting the specified image subject according to Claim 15, wherein a combination of a plurality of image characteristic quantities selected from the group consisting of a position, size, direction or orientation of an extraction area and, a posture, density or color tint of an image subject is used as the N-dimensional space of said image characteristic quantity (Figures 1-5; Pages 656-657, Section 2, Sub-sections 2.1-2.5. Skin/non-skin classification and shape classification algorithms implement a plurality of image characteristic quantities consisting of position, size, direction or orientation of an extraction area (Face, Eye, Nose and Mouth) and, a posture, density or color tint of an image subject (Skin-non-skin color classification in YES color space).).

Regarding Claim 19, Saber et al further disclose the method of extracting the specified image subject according to Claim 15, wherein weighting value lowering processing is applied to a region within a predetermined area on a specific characteristic axis with respect to a neighborhood of the region, in which said aggregation value became large, in said N-dimensional characteristic stage (Figures 1-5; Pages 656-657, Section 2, Sub-sections 2.4-2.5. Principal axes of the elliptical skin classified region in N-dimensional eigenspace. Eyes are located on a line which is parallel to the minor axis represented by the direction of the eigenvector corresponding to the smaller eigen values.).

Regarding Claim 20, it is a conventional methodology in statistical decision processing to remove a remarkably large size or a remarkably small size from extraction

data to increase the accuracy and reliability of extracting the subjects for recognition or

classification purposes (Official Notice).

With regards to Claim 21, arguments analogous to those presented for Claim 15

are applicable to Claim 21.

With regards to Claim 22, arguments analogous to those presented for Claim 16

are applicable to Claim 22.

With regards to Claim 23, arguments analogous to those presented for Claim 17

are applicable to Claim 23.

With regards to Claim 24, arguments analogous to those presented for Claim 18

are applicable to Claim 24.

With regards to Claim 25, arguments analogous to those presented for Claim 19

are applicable to Claim 25.

With regards to Claim 26, arguments analogous to those presented for Claim 20

are applicable to Claim 26.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 2-7 and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Saber et al (Face Detection and Facial Feature Extraction Using Color, Shape and

Symmetry-based Cost Functions; IEEE Proceedings on Pattern Recognition, ISBN: 1015-4651).

With regards to Claims 2 and 9, arguments analogous to those presented for Claim 1 are applicable to Claim 2 and 9. Saber et al disclose performing a plurality of image subject extracting algorithm of the subsequent stage (Sub-section 2.5; Algorithms resulted in cost functions indicated by Formulas (5) through (9)).

Saber et al do not explicitly disclose the plurality of image subject extracting algorithm of the subsequent stage being performed by parallel processing.

The Examiner takes Official Notice that parallel processing is an extremely well known procedure in image processing.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Saber et al invention to perform the plurality of image subject extracting algorithm of the subsequent stage by parallel processing because it is an extremely well known procedure routinely implemented in the art to expedite image processing.

Regarding Claim 3, Saber et al further disclose the method of extracting the specified image subject according to Claim 2, wherein said respective extraction processing conditions are areas to be subjected to extraction processing when implementing said plurality of specified image subject extracting algorithms of said subsequent stage (Figures 1-5, Face Areas).

Regarding Claim 4, Saber et al further disclose the method of extracting the specified image subject according to Claim 2, wherein said respective extraction

processing conditions are types of extracting algorithms to be implemented at said

subsequent stage (Figures 1-3, Pages 656-657, Sub-section 2.4, Shape classification

algorithms for locating face, nose, mouth, etc.).

Regarding Claim 5, Saber et al further disclose the method of extracting the

specified image subject according to Claim 2, wherein said respective extraction

processing conditions are control parameters inside extracting algorithms to be

implemented in said subsequent stage (Figures 2 and 3; Pages 656-657, Sub-sections

2.4 and 2.5, m_1, m_2, eigenvalues of R, (λ_1, λ_2), etc.).

With regards to Claim 6, arguments analogous to those presented for Claim 2

concerning parallel processing are applicable to Claim 6.

Saber et al further disclose the method of extracting the specified image subject

according to Claim 2, wherein said plurality of specified image subject extracting

algorithms to be implemented in said each stage are of same combination in said

plurality of stages (Sub-section 2.5. Algorithms resulted in cost functions are indicated

by Formulas (5) through (10), utilizing the same combination of defining the centroids

and location of the holes (eyes).).

With regards to Claim 7, arguments analogous to those presented for Claim 2

concerning parallel processing are applicable to Claim 7.

Saber et al further disclose the method of extracting the specified image subject

according to Claim 2, wherein said plurality of specified image subject extracting

algorithms to be implemented in said each stage are of different combination in said

plurality of stages (Sub-section 2.5. Algorithms resulted in localization of the nose and mouth as depicted in Figure 3.).

With regards to Claim 10, arguments analogous to those presented for Claim 3 are applicable to Claim 10.

With regards to Claim 11, arguments analogous to those presented for Claim 4 are applicable to Claim 11.

With regards to Claim 12, arguments analogous to those presented for Claim 5 are applicable to Claim 12.

With regards to Claim 13, arguments analogous to those presented for Claim 6 are applicable to Claim 13.

With regards to Claim 14, arguments analogous to those presented for Claim 7 are applicable to Claim 14.

Other Prior Art Cited

6.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,930,391 to Kinjo is cited for method of extracting a region of a specific configuration and determining copy condition.

U.S. Patent 5,299,284 to Roy is cited for pattern classification using linear programming.

IEEE Paper ISBN: 0-7803-3253 to Yokoyama et al is cited for automatic detection of facial feature points and contours.

IEEE Paper ISBN: 0-7803-3253 to Wu et al is cited for face detection and rotations estimation using color information.

Contact Information

7.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mehrdad Dastouri whose telephone number is (703) 305-2438. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center Customer Service Office whose telephone number is (703) 306-0377.

MEHRDAD DASTOURI
PRIMARY EXAMINER

Mehrdad Dastouri
Primary Examiner
Group Art Unit 2623
September 29, 2003